

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An exposure method which transfers a predetermined pattern onto a substrate by using an exposure beam from an exposure light source, comprising:

dividing an optical path of the exposure beam from the exposure light source to the substrate into a plurality of partial optical paths, ~~and~~ having lengths different from one another;

respectively setting allowable concentrations of absorption substance, which absorbs the exposure beam, in the plurality of partial optical paths depending on a length of each of the partial optical paths; and

managing concentrations of an ~~the~~ absorption substance, which ~~absorbs the exposure beam~~, in the plurality of the partial optical paths independently of each other in order for the concentrations of the absorption substance in the plurality of the partial optical paths to be respectively equal to or lower than the set allowable concentrations of the absorption substance in the plurality of the partial optical paths.

2. (Currently Amended) An exposure method which irradiates an exposure beam from an exposure light source onto a mask through an illumination system and transfers a pattern of the mask onto a substrate through a projecting optical system, comprising:

dividing an optical path of the exposure beam from the exposure light source to the substrate into a plurality of partial optical paths including an illumination system portion in the illumination system, a mask operating portion provided around the mask, a projecting optical system portion including at least a part of the projecting optical system and a substrate operating portion including an upper portion of the substrate, ~~and~~;

_____ respectively setting allowable concentrations of absorption substance, which absorbs the exposure beam, in the plurality of the partial optical paths depending on a length of each of the partial optical paths; and

_____ managing concentrations of an ~~the~~ absorption substance, which ~~absorbs the exposure beam,~~ in the plurality of the partial optical paths independently of each other in order for the concentrations of the absorption substance in the plurality of the partial optical paths to be respectively equal to or lower than the set allowable concentrations of the absorption substance in the plurality of the partial optical paths.

3. (Canceled)

4. (Currently Amended) An exposure method as recited in claim 1, wherein a gas ~~having a transmittance~~ which is transparent with respect to the exposure beam is supplied to at least a part of the plurality of the partial optical paths for the exposure beam.

5. (Currently Amended) An exposure method as recited in claim 1, wherein the exposure beam is a light in a vacuum ~~violet~~ ultraviolet region, and the absorption substance is oxygen, water or carbon dioxide.

6. (Currently Amended) An exposure method which transfers a predetermined pattern onto a substrate by using an exposure beam from an exposure light source, comprising:

_____ dividing an optical path of the exposure beam from the exposure light source to the substrate into a plurality of partial optical paths and having lengths different from one another;

_____ respectively setting allowable absorptances of the exposure beam depending on a length of each of the partial optical paths; and

_____ managing ~~transmittances of the~~ concentrations of an absorption substance, which absorbs the exposure beam, in the plurality of the partial optical paths independently of

each other in order for absorptances of the exposure beam in the plurality of the partial optical paths to be the set allowable absorptances of the exposure beam in the plurality of the partial optical paths.

7. (Currently Amended) An exposure method which transfers a predetermined pattern onto a substrate by using an exposure beam from an exposure light source, comprising:

_____ dividing an optical path of the exposure beam from the exposure light source to the substrate into a plurality of partial optical paths, ~~and~~ said plurality of partial optical paths respectively including absorption substance therein, which absorbs the exposure beam;

_____ respectively supplying a gas which is transparent with respect to the exposure beam to each of the plurality of the partial optical paths;

_____ respectively setting concentrations of the gas in the plurality of the partial optical paths depending on a length of each of the partial optical paths; and

_____ managing concentrations of a gas the absorption substance in the plurality of the partial optical paths independently of each other in order for concentrations of the gas in the plurality of the partial optical paths to be the set concentrations of the gas in the plurality of the partial optical paths.

8. (Canceled)

9. (Currently Amended) An exposure apparatus which transfers a predetermined pattern onto a substrate by using an exposure beam from an exposure light source, comprising:

_____ ~~a plurality of chambers which covers a plurality of partial optical paths formed by dividing~~ divide an optical path of the exposure beam from the exposure light source to the substrate into a plurality of partial optical paths having lengths different from one another and

which covers the plurality of the partial optical paths to substantially isolate the plurality of the partial optical paths from outside air, respectively; and

_____ a controller which is connected to the plurality of chambers and which manages concentrations of an absorption substance, which absorbs the exposure beam, in the plurality of the chambers independently of each other in order for concentrations of the absorption substance in the plurality of the partial optical paths to be respectively equal to or lower than set allowable concentrations of the absorption substance in the plurality of the partial optical paths.

10. (Currently Amended) An exposure apparatus as recited in claim 9, further comprising:

_____ ~~a concentration sensor which measures~~ sensors which are disposed in the plurality of the chambers and which measure the concentrations of the absorption substance in the plurality of the chambers; and

_____ an eliminator which is connected to the controller and which eliminates the absorption substance in the plurality of the chambers, wherein the controller manages the concentrations of the absorption substance through the eliminator according to the result of measurement of the concentration ~~sensors~~ sensors.

11. (Currently Amended) An exposure apparatus as recited in claim 9, wherein:

_____ the predetermined pattern is a pattern formed on a mask;

_____ ~~a the~~ the pattern of the mask is transferred onto the substrate through a projecting optical system; and

_____ the plurality of the chambers include a first chamber which covers an illuminating system portion in an illuminating system for the exposure beam, a second chamber which covers a mask operating portion around the mask, a third chamber which covers a projecting optical system portion including at least a part of the projecting optical

system, and a fourth chamber which covers a substrate operating portion including an upper portion of the substrate.

12. (Currently Amended) An exposure apparatus which transfers a predetermined pattern onto a substrate by using an exposure beam from an exposure light source, comprising:

_____ a plurality of chambers which ~~covers a plurality of partial optical paths formed by dividing~~divide an optical path of the exposure beam from the exposure light source to the substrate into a plurality of partial optical paths having lengths different from one another and which cover the plurality of the partial optical paths to substantially isolate the plurality of the partial optical paths from outside air, respectively; and;

_____ a supply device which is connected to the plurality of the chambers and which supplies a gas which is transparent with respect to the exposure beam to each of the plurality of the chambers; and

_____ a controller which is connected to the plurality of the chambers and which manages concentrations of ~~a gas~~ absorption substance, which absorbs the exposure beam, in the plurality of the chambers independently of each other in order for concentrations of the gas in the plurality of the partial optical paths to be concentrations of the gas in the plurality of the partial optical paths which have been set depending on a length of each of the partial optical paths.

13. (Previously Amended) A method of manufacturing a device, comprising transferring a predetermined pattern onto the substrate in a state that an illuminance of an exposure beam is managed on the substrate by using the exposure method as recited in claim 1.

14. (Canceled)

15. (Currently Amended) An exposure method as recited in claim 1, wherein the set allowable concentrations of the absorption substance are different from each other for every partial optical path.

16. (Currently Amended) An exposure method as recited in claim 15, wherein ~~the allowable concentrations of the absorption substance are set every partial optical path, and~~ when the concentration of the absorption substance in at least one of the plurality of the partial optical paths is equal to or more than the set allowable concentration thereof, the transfer operation is stopped.

17. (Currently Amended) An exposure method as recited in claim 1, wherein ~~different kinds of gases are~~ which are transparent with respect to the exposure beam are respectively supplied to the plurality of the partial optical paths, and kinds of the gases are different from one another depending on lengths of the partial optical paths.

18. (Previously Added) An exposure method as recited in claim 17, wherein a helium gas is supplied to a space of the partial optical path having a long length and a nitrogen gas is supplied to a space of the partial optical path having a short length.

19. (Previously Added) An exposure method as recited in claim 2, wherein there is provided a delivery space which delivers the mask from a mask library to the mask operating portion, and in the delivery space, a concentration of the absorption substance is managed independently of the concentrations of the absorption substance of the partial optical paths including the mask operating portion.

20. (Previously Added) An exposure method as recited in claim 19, wherein in the space of the mask library, a concentration of the absorption substance is managed independently from that of the delivery space.

21. (Previously Added) An exposure method as recited in claim 2, wherein a gas which is transparent with respect to the exposure beam is supplied from the projecting optical

system side to between the projecting optical system and the substrate, and the gas is discharged from the substrate side.

22. (Previously Added) An exposure method as recited in claim 21, wherein a ratio of the supply of the gas is smaller than that of discharge of the gas.

23. (Canceled)

24. (Canceled)

25. (Previously Added) An exposure apparatus as recited in claim 10, wherein the controller stops the transfer operation when the concentration of the absorption substance in at least one of the plurality of the chambers is equal to or higher than a predetermined allowable concentration.

26. (Currently Amended) An exposure apparatus as recited in claim ~~24~~9, further comprising a supply device which is connected to the plurality of the chambers and which respectively supplies ~~different kinds of~~ gases which are transparent with respect to the exposure beam into the plurality of ~~chambers depending on lengths of~~ the partial optical paths.

27. (Currently Amended) An exposure apparatus as recited in claim 9, further comprising a mask library which accommodates a mask, wherein the controller manages a concentration of an absorption substance in a delivery space between the mask library and the second chamber.

28. (Previously Added) An exposure apparatus as recited in claim 27, wherein the controller manages a concentration of an absorption substance in a space of the mask library.

29. (Currently Amended) An exposure method, comprising transferring a predetermined pattern onto a substrate by using an exposure beam from an exposure light source, wherein;

_____ an optical path of the exposure beam from the exposure light source to the substrate is divided into a plurality of partial optical paths, ~~and~~ having lengths different from one another;

_____ allowable concentrations of absorption substance, which absorbs the exposure beam, in the plurality of the partial optical paths are respectively set depending on a length of each of the partial optical paths; and

_____ concentrations of ~~an the~~ absorption substance, ~~which absorbs the exposure beam are;~~ in the plurality of the partial optical paths are managed independently of each other in order for the concentrations of the absorption substance in the plurality of the partial optical paths to be respectively equal to or lower than the set allowable concentrations of the absorption substance in the plurality of the partial optical paths.

30. (Currently Amended) An exposure method, comprising irradiating an exposure beam from an exposure light source onto a mask through an illumination system ~~and transfers so as to transfer~~ a pattern of the mask onto a substrate through a projecting optical system, wherein:

_____ an optical path of the exposure beam from the exposure light source to the substrate is divided into a plurality of partial optical paths including an illumination system portion in the illumination system, a mask operating portion provided around the mask, a projecting optical system portion including at least a part of the projecting optical system and a substrate operating portion including an upper portion of the substrate, ~~and;~~

_____ allowable concentrations of absorption substance, which absorbs the exposure beam, in the plurality of the partial optical paths are respectively set depending on a length of each of the partial optical paths; and

_____ concentrations of ~~an the~~ absorption substance, ~~which absorbs the exposure beam;~~ in the plurality of the partial optical paths are managed independently of each other in

order for the concentrations of the absorption substance in the plurality of the partial optical paths to be respectively equal to or lower than the set allowable concentrations of the absorption substance in the plurality of the partial optical paths.

31. (Currently Amended) An exposure method, comprising transferring a predetermined pattern onto a substrate by using an exposure beam from an exposure light source, wherein;

_____ an optical path of the exposure beam from the exposure light source to the substrate is divided into a plurality of partial optical paths ~~and transmittances~~ having lengths different from one another;

_____ allowable absorptances of the exposure beam are respectively set depending on a length of each of the partial optical paths; and

_____ concentrations of an absorption substance, which absorbs ~~of~~ the exposure beam, in the plurality of the partial optical paths are managed independently of each other in order for absorptances of the exposure beam in the plurality of the partial optical paths to be the set allowable absorptances of the exposure beam in the plurality of the partial optical paths.

32. (Currently Amended) An exposure method, comprising transferring a predetermined pattern onto a substrate by using an exposure beam from an exposure light source, wherein;

_____ an optical path of the exposure beam from the exposure light source to the substrate is divided into a plurality of partial optical paths, ~~and said plurality of partial optical paths respectively including absorption substance therein, which absorbs the exposure beam;~~

_____ a gas which is transparent with respect to the exposure beam is supplied to each of the plurality of the partial optical paths;

concentrations of the gas in the plurality of the partial optical paths are respectively set depending on a length of each of the partial optical paths; and
concentrations of a gas the absorption substance in the plurality of the partial optical paths are managed independently of each other in order for concentrations of the gas in the plurality of the partial optical paths to be the set concentrations of the gas in the plurality of the partial optical paths.

33. (New) An exposure method as recited in claim 1, wherein the optical path of the exposure beam includes an optical path of an illuminating system which illuminates a mask on which the predetermined pattern is formed, an optical path of a projecting optical system which transfers the predetermined pattern onto the substrate, an optical path between the illuminating system and the projecting optical system and an optical path between the projecting optical system and the substrate.

34. (New) An exposure method as recited in claim 33, wherein the optical path between the illuminating system and the projecting optical system is shorter than the optical path of the illuminating system.

35. (New) An exposure method as recited in claim 33, wherein the optical path between the projecting optical system and the substrate is shorter than the optical path of the projecting optical system.

36. (New) An exposure method as recited in claim 34, wherein outside air flows into the optical path between the illuminating system and the projecting optical system more easily than the optical path of the illuminating system.

37. (New) An exposure method as recited in claim 35, wherein outside air flows into the optical path between the projecting optical system and the substrate more easily than the optical path of the projecting optical system.

38. (New) An exposure method as recited in claim 1, wherein the allowable concentrations of the absorption substance is set in order for allowable absorptances of the exposure beam in the plurality of the partial optical paths to be constant.

39. (New) An exposure method as recited in claim 1, wherein a gas which is transparent with respect to the exposure beam is supplied to each of the plurality of the partial optical paths, and the concentrations of the absorption substance are managed by exhausting the absorption substance outside the partial optical paths together with the transparent gas.

40. (New) An exposure method as recited in claim 7, wherein the optical path of the exposure beam includes an optical path of an illuminating system which illuminates a mask on which the predetermined pattern is formed, an optical path of a projecting optical system which transfers the predetermined pattern onto the substrate, an optical path between the illuminating system and the projecting optical system and an optical path between the projecting optical system and the substrate.

41. (New) An exposure method as recited in claim 40, wherein the optical path between the illuminating system and the projecting optical system is shorter than the optical path of the illuminating system.

42. (New) An exposure method as recited in claim 40, wherein the optical path between the projecting optical system and the substrate is shorter than the optical path of the projecting optical system.

43. (New) An exposure method as recited in claim 41, wherein outside air flows into the optical path between the illuminating system and the projecting optical system more easily than the optical path of the illuminating system.

44. (New) An exposure method as recited in claim 42, wherein outside air flows into the optical path between the projecting optical system and the substrate more easily than the optical path of the projecting optical system.

45. (New) An exposure method as recited in claim 7, wherein the concentrations of the absorption substance are managed by exhausting the absorption substance outside the partial optical paths together with the transparent gas.

46. (New) An exposure apparatus as recited in claim 9, wherein the controller sets allowable concentrations of the absorption substance in order for allowable absorptances of the exposure beam in the plurality of the partial optical paths to be constant.

47. (New) An exposure apparatus as recited in claim 12, further comprising:
concentration sensors which are disposed in the plurality of chambers and which measure the concentrations of the absorption substance in the chambers, and
an eliminator which is connected to the controller and which eliminates the absorption substance in the plurality of the chambers according to the measurement result of the concentration sensors.

48. (New) An exposure apparatus as recited in claim 12, wherein:
the predetermined pattern is a pattern formed on a mask;
a pattern of the mask is transferred onto the substrate through a projecting optical system; and
the plurality of the chambers include a first chamber which covers an illuminating system portion in an illuminating system for the exposure beam, a second chamber which covers a mask operating portion around the mask, a third chamber which covers a projecting optical system portion including at least a part of the projecting optical system, and a fourth chamber which covers a substrate operating portion including an upper portion of the substrate.

49. (New) An exposure apparatus as recited in claim 12, wherein the controller stops the transfer operation when the concentrations of the absorption substance included in

the transparent gas becomes equal to or larger than a predetermined value in at least one chamber of the plurality of the chambers.